AMENDMENTS TO THE CLAIMS

Please amend claims 1-6, 8, and 10-16 as set forth below. Please add new claims 17-36 as set forth below. Claims 7 and 9 remain unchanged.

1. (currently amended) A method for financial estimation, the method comprising:

(a) providing a portfolio of financial instruments having a schedule of payment times;

(b) generating a plurality of interest rate scenarios by Monte Carlo simulation using a stochastic term structure;

(c) calculating, for each financial instrument[[;]], a set of financial outcomes using a subset of interest rate scenarios;

(d) interpolating, from the sets of financial outcomes, a first function that estimates the aggregate value of the portfolio when sampled at the payment times with an aggregate principal of the portfolio and a first interest rate scenario;

(e) providing a second function that estimates a value for a financial instrument from the portfolio when sampled at the payment times using a second interest rate scenario;

(f) using an interest rate scenario from the plurality of interest rate scenarios, calculating a value of the second function for each financial instrument in the portfolio and a value of the first function to estimate, respectively, a value for the portfolio and an aggregate value for the portfolio[[,]]; and[[;]]

(g) forming a control variate based upon the estimated value of the portfolio, the estimated aggregated value of the portfolio, and an expected value of the aggregate value of the portfolio.

2. (currently amended) The method of claim 1, further comprising.

repeating ~~steps~~ (e) through (g); and

averaging the resulting control variates to estimate a value for the portfolio.

3. (currently amended) The method of claim 2, wherein the interest rate scenarios used in the repetition of ~~steps~~ (e) through (f) do not belong to the subset of interest rate scenarios used in ~~step~~ (c).

4. (currently amended) The method of claim 3, wherein ~~step~~ (d) comprises:

deriving an average prepayment for the portfolio as a function of the interest rate[[,]];

deriving a third function giving the cashflow not resulting from prepayments for the portfolio as a function of the principal of the portfolio[[,]]; and

deriving a fourth function giving the principal of the portfolio at an *(i + 1)*th payment time based upon the change in principal predicted by the value of the average prepayment for the portfolio at an *i*th payment time.

5. (currently amended) The method of claim 4, wherein the aggregate principal at the *(i + 1)*th payment time is given as the value of the fourth function minus the product of the fourth function times the average prepayment at the *i*th payment time.

6. (currently amended) The method of claim 5, wherein an aggregate cashflow at the *i*th payment time is given as a sum of the third function and the product of the aggregate principal times the average prepayment at the *i*th payment time.

7. (original) The method of claim 6, wherein the first function is a function of the aggregate cashflow.

8. (currently amended) A method for financial estimation of a portfolio of financial instruments, the method comprising:

(a) providing a first function giving an aggregate value for the portfolio;

(b) providing a second function giving a value for a financial instrument within the portfolio;

(c) using an interest rate scenario, calculating a value for the portfolio using the second function and the aggregate value for the portfolio using the first function; and

(d) forming a control variate based upon the value of the portfolio, the aggregate value for the portfolio, and an expected value of the aggregate value for the portfolio.

9. (original) The method of claim 8, wherein the first function gives an aggregate value for the portfolio as a function of an aggregate principal of the portfolio and an interest rate scenario.

10. (currently amended) A computer program product that includes a computer-usable medium, the medium having stored thereon a sequence of instructions which, when executed by a processor, causes the processor to execute a process for financial estimation, said process comprising:

(a) providing a portfolio of financial instruments having a schedule of payment times;

(b) generating a plurality of interest rate scenarios by Monte Carlo simulation using a stochastic term structure;

(c) calculating, for each financial instrument[[;]], a set of financial outcomes using a subset of interest rate scenarios;

(d) interpolating, from the sets of financial outcomes, a first function that estimates the aggregate value of the portfolio when sampled at the payment times with an aggregate principal of the portfolio and a first interest rate scenario;

(e) providing a second function that estimates a value for a financial instrument from the portfolio when sampled at the payment times using a second interest rate scenario;

(f) using an interest rate scenario from the plurality of interest rate scenarios, calculating a value of the second function for each financial instrument in the portfolio and a value of the first function to estimate, respectively, a value for the portfolio and an aggregate value for the portfolio[[,]]; and[[;]]

(g) forming a control variate based upon the estimated value of the portfolio, the estimated aggregated value of the portfolio, and an expected value of the aggregate value of the portfolio.

11. (currently amended) The ~~method~~ computer program product of claim 10, wherein said process further ~~comprising~~ comprises:

repeating ~~steps~~ (e) through (g); and

averaging the resulting control variates to estimate a value for the portfolio.

12. (currently amended) The ~~method~~ computer program product of claim 11, wherein the interest rate scenarios used in the repetition of ~~steps~~ (e) through (f) do not belong to the subset of interest rate scenarios used in ~~step~~ (c).

13. (currently amended) The ~~method~~ computer program product of claim 12, wherein ~~step~~ (d) comprises:

deriving an average prepayment for the portfolio as a function of the interest rate[[,]];

deriving a third function giving the cashflow not resulting from prepayments for the portfolio as a function of the principal of the portfolio[[,]]; and

deriving a fourth function giving the principal of the portfolio at an *(i + 1)*th payment time based upon the change in principal predicted by the value of the average prepayment for the portfolio at an *i*th payment time.

14. (currently amended) The ~~method~~ computer program product of claim 13, wherein the aggregate principal at the *(i + 1)*th payment time is given as the value of the fourth function minus the product of the fourth function times the average prepayment at the *i*th payment time.

15. (currently amended) The ~~method~~ computer program product of claim 14, wherein an aggregate cashflow at the *i*th payment time is given as a sum of the third function and the product of the aggregate principal times the average prepayment at the *i*th payment time.

16. (currently amended) The ~~method~~ computer program product of claim 15, wherein the first function is a function of the aggregate cashflow.

17. (new) A computer program product that includes a computer-usable medium, the medium having stored thereon a sequence of instructions which, when executed by a processor, causes the processor to execute a process for financial estimation of a portfolio of financial instruments, the process comprising:

(a) providing a first function giving an aggregate value for the portfolio;

(b) providing a second function giving a value for a financial instrument within the portfolio;

(c) using an interest rate scenario, calculating a value for the portfolio using the second function and the aggregate value for the portfolio using the first function; and

(d) forming a control variate based upon the value of the portfolio, the aggregate value for the portfolio, and an expected value of the aggregate value for the portfolio.

18. (new) The computer program product of claim 17, wherein the first function gives an aggregate value for the portfolio as a function of an aggregate principal of the portfolio and an interest rate scenario.

19. (new) A system for financial estimation, the system comprising:

(a) means for providing a portfolio of financial instruments having a schedule of payment times;

(b) means for generating a plurality of interest rate scenarios by Monte Carlo simulation using a stochastic term structure;

(c) means for calculating, for each financial instrument, a set of financial outcomes using a subset of interest rate scenarios;

(d) means for interpolating, from the sets of financial outcomes, a first function that estimates the aggregate value of the portfolio when sampled at the payment times with an aggregate principal of the portfolio and a first interest rate scenario;

(e) means for providing a second function that estimates a value for a financial instrument from the portfolio when sampled at the payment times using a second interest rate scenario;

(f) means for using an interest rate scenario from the plurality of interest rate scenarios, calculating a value of the second function for each financial instrument in the portfolio and a value of the first function to estimate, respectively, a value for the portfolio and an aggregate value for the portfolio; and

(g) means for forming a control variate based upon the estimated value of the portfolio, the estimated aggregated value of the portfolio, and an expected value of the aggregate value of the portfolio.

20. (new) The system of claim 19, further comprising.

means for repeating (e) through (g); and

means for averaging the resulting control variates to estimate a value for the portfolio.

21. (new) The system of claim 20, wherein the interest rate scenarios used in the repetition of (e) through (f) do not belong to the subset of interest rate scenarios used in (c).

22. (new) The system of claim 21, wherein (d) comprises:

means for deriving an average prepayment for the portfolio as a function of the interest rate;

means for deriving a third function giving the cashflow not resulting from prepayments for the portfolio as a function of the principal of the portfolio; and

means for deriving a fourth function giving the principal of the portfolio at an $(i + 1)$th payment time based upon the change in principal predicted by the value of the average prepayment for the portfolio at an ith payment time.

23. (new) The system of claim 22, wherein the aggregate principal at the $(i + 1)$th payment time is given as the value of the fourth function minus the product of the fourth function times the average prepayment at the ith payment time.

24. (new) The system of claim 23, wherein an aggregate cashflow at the ith payment time is given as a sum of the third function and the product of the aggregate principal times the average prepayment at the ith payment time.

25. (new) The system of claim 24, wherein the first function is a function of the aggregate cashflow.

26. (new) A system for financial estimation of a portfolio of financial instruments, the system comprising:

(a) means for providing a first function giving an aggregate value for the portfolio;

(b) means for providing a second function giving a value for a financial instrument within the portfolio;

(c) means for using an interest rate scenario, calculating a value for the portfolio using the second function and the aggregate value for the portfolio using the first function; and

(d) means for forming a control variate based upon the value of the portfolio, the aggregate value for the portfolio, and an expected value of the aggregate value for the portfolio.

27. (new) The system of claim 26, wherein the first function gives an aggregate value for the portfolio as a function of an aggregate principal of the portfolio and an interest rate scenario.

28. (new) A computer implemented method for financial estimation, the method comprising:

(a) providing a portfolio of financial instruments having a schedule of payment times;

(b) generating a plurality of interest rate scenarios by Monte Carlo simulation using a stochastic term structure;

(c) calculating, for each financial instrument, a set of financial outcomes using a subset of interest rate scenarios;

(d) interpolating, from the sets of financial outcomes, a first function that estimates the aggregate value of the portfolio when sampled at the payment times with an aggregate principal of the portfolio and a first interest rate scenario;

(e) providing a second function that estimates a value for a financial instrument from the portfolio when sampled at the payment times using a second interest rate scenario;

(f) using an interest rate scenario from the plurality of interest rate scenarios, calculating a value of the second function for each financial instrument in the portfolio and a value of the first function to estimate, respectively, a value for the portfolio and an aggregate value for the portfolio; and

(g) forming a control variate based upon the estimated value of the portfolio, the estimated aggregated value of the portfolio, and an expected value of the aggregate value of the portfolio.

29. (new) The method of claim 28, further comprising.

repeating (e) through (g); and

averaging the resulting control variates to estimate a value for the portfolio.

30. (new) The method of claim 29, wherein the interest rate scenarios used in the repetition of (e) through (f) do not belong to the subset of interest rate scenarios used in (c).

31. (new) The method of claim 30, wherein (d) comprises:

deriving an average prepayment for the portfolio as a function of the interest rate;

deriving a third function giving the cashflow not resulting from prepayments for the portfolio as a function of the principal of the portfolio; and

deriving a fourth function giving the principal of the portfolio at an $(i + 1)$th payment time based upon the change in principal predicted by the value of the average prepayment for the portfolio at an ith payment time.

32. (new) The method of claim 31, wherein the aggregate principal at the $(i + 1)$th payment time is given as the value of the fourth function minus the product of the fourth function times the average prepayment at the ith payment time.

33. (new) The method of claim 32, wherein an aggregate cashflow at the *i*th payment time is given as a sum of the third function and the product of the aggregate principal times the average prepayment at the *i*th payment time.

34. (new) The method of claim 33, wherein the first function is a function of the aggregate cashflow.

35. (new) A computer implemented method for financial estimation of a portfolio of financial instruments, the method comprising:

(a) providing a first function giving an aggregate value for the portfolio;

(b) providing a second function giving a value for a financial instrument within the portfolio;

(c) using an interest rate scenario, calculating a value for the portfolio using the second function and the aggregate value for the portfolio using the first function; and

(d) forming a control variate based upon the value of the portfolio, the aggregate value for the portfolio, and an expected value of the aggregate value for the portfolio.

36. (new) The method of claim 35, wherein the first function gives an aggregate value for the portfolio as a function of an aggregate principal of the portfolio and an interest rate scenario.